AMENDMENTS TO THE CLAIMS

This listing and version of the claims replaces all prior listings and versions of the claims.

Listing of Claims:

1. (Currently amended) A method for controlling exposure energy on a patterned wafer substrate, comprising the steps of: controlling the exposure energy with a feedback process control signal of critical dimension, and further controlling the exposure energy with a feed forward process control signal of a compensation amount that compensates for wafer thickness variations, the critical dimension being one of a width, a spacing and an opening of the patterned wafer substrate.

2. (Original) The method of claim 1, further comprising the step of: combining the feed forward control signal with the feedback process control signal to control the exposure energy.

3. (Original) The method of claim 1, further comprising the step of: supplying the feed forward process control signal by a feed forward controller.

4. (Original) The method of claim 1, further comprising the step of: controlling the exposure energy by a feed forward control signal of an interlayer thickness measurement.

5. (Previously presented) The method of claim 1, further comprising the step of: controlling the exposure energy by a feed forward control signal of an interlayer thickness measurement remaining after chemical mechanical planarization thereof.

6. (Original) The method of claim 1, further comprising the step of: calculating the compensation amount according to a polynomial function with a coefficient of the function being based on a measurement of a remaining thickness of a planarized interlayer.

7. (Previously presented) The method of claim 1, further comprising the step of: calculating the feedback process control signal of critical dimension measurement of a top layer in a previous manufacturing lot.

8. (Previously presented) The method of claim 1, further comprising the steps of: calculating the compensation amount according to a polynomial function with a coefficient of the function being based on a measurement of a remaining thickness of a planarized interlayer; and calculating the feedback process control signal of critical dimension measurement of a top layer in a previous manufacturing lot.

9. (Original) The method of claim 1, further comprising the steps of: calculating the compensation amount according to a polynomial function with higher order coefficients set at zero.

10. (Original) The method of claim 1, further comprising the steps of: calculating the compensation amount according to a linear function.

11. (Original) The method of claim 1, further comprising the steps of: calculating the compensation amount according to a segmented linear function.

12. (Currently Amended) A system for controlling exposure energy on a first patterned wafer substrate, comprising:

a feed forward controller providing a feed forward control signal to an exposure apparatus based on a thickness measurement of an interlayer of the first patterned wafer substrate for controlling the exposure energy focused on a top layer of the first patterned wafer substrate, and

a feedback controller providing a feedback exposure energy control signal to the exposure apparatus based on critical dimension measurement of a top layer of a second patterned wafer substrate of a previous manufacturing lot, the critical dimension being one of a width, a spacing and an opening of the second patterned wafer substrate.

13. (Original) The system of claim 12, further comprising: a thickness measurement device providing thickness measurement data to the feed forward controller.

14. (Previously presented) The system of claim 12, further comprising: a criteria dimension measurement device providing critical dimension measurement data to the feedback controller.

15. (Previously presented) The system of claim 12, further comprising:

a thickness measurement device providing thickness measurement data to the feed forward controller and

a critical dimension measurement device providing critical dimension measurement data to the feedback controller.

16. (Currently amended) The system of claim 12, further comprising: a thickness measurement device providing thickness measurement data of a shallow trench isolation layer of the first patterned wafer substrate to the feed forward controller.

17. (Currently Amended) The system of claim 12, further comprising: a criteria dimension measurement device providing critical dimension measurement data of a poly-gate of the second patterned wafer ~~substrates~~substrate of a previous manufacturing lot.

18. (Currently Amended) The system of claim 12, further comprising:

a thickness measurement device providing thickness measurement data of a shallow trench isolation layer of the first patterned wafer substrate to the feed forward controller, and

a critical dimension measurement device providing criteria dimension measurement data of a poly-gate of a previous manufacturing lot.

19. (Original) The system of claim 12 wherein,

the feed forward controller is user configurable by having one or more polynomial coefficients set to zero in a polynomial function model.

20. (Original) The system of claim 12 wherein;

the feed forward controller is user configurable by having one or more polynomial coefficients set to zero in a polynomial function model.

21. (Currently amended) The system of claim 20, further comprising: a thickness measurement device providing thickness measurement data of a shallow trench isolation layer of the first patterned wafer substrate to the feed forward controller.

22. (Currently Amended) The system of claim 20, further comprising: a ~~criteria~~ critical dimension measurement device providing critical dimension measurement data of a poly-gate of the second patterned wafer ~~substratess~~substrate of a previous manufacturing lot.